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Basic BLUE in East Slavonic

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Abstract

Russian's second BLUE term goluboj *'light blue' constitutes a well-known exception to the Berlin and Kay basic color-term typology. If other Slavonic languages do not have a second BLUE term, then the special position of Russian requires explanation; if there is evidence pointing to two basic terms for BLUE, we have a second set of data for investigating the evolution of this unusual color system. The languages genetically closest to Russian, Ukrainian and Belarusian, are examined. Findings of the list task, a simple and elegant test for psychological salience of color terms, provide strong evidence that Ukrainian and Belarusian have also evolved a second BLUE. What is interesting is that the term is not the general East Slavonic term that Russian uses, but a Polish borrowing:* blakytnyj *'light blue' (Ukrainian),* blakitny *'light blue' (Belarusian). This opens up the possibility that a category, in this case the second BLUE, may be borrowed separately from the basic term that denotes it. Since the category has been borrowed separately from its term, we have evidence of a different kind that the Russian color system includes a second BLUE: the category is salient enough to be borrowed separately from the term that denotes it.*

Introduction

Berlin and Kay's (1969) basic color-term typology, given in Figure 1, has prompted much discussion about color categories among anthropologists, linguists, and psychologists.[2] According to the theory, there is a maximum of eleven basic color terms, and their emergence is universally highly constrained: a term for RED in a language will imply the presence of WHITE and BLACK, etc.[3] The typology, with significant modifications (Kay and McDaniel 1978; Kay et al. 1991; and Kay et al. 1997), has proved remarkably robust.

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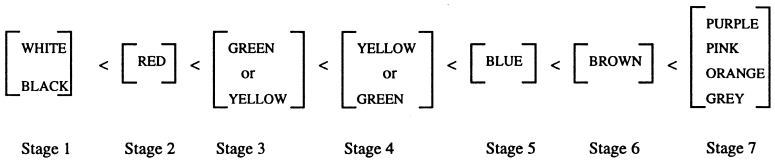

Figure 1. *Berlin and Kay (1969) basic color-term typology*

The hierarchy is a constraint on the evolution of basic color terms in a language. Diachronically, languages evolve through stages 1 to 7. Hence a stage 5 language with a BLUE term must have emerged from a stage 4 language that lacked a BLUE but had terms for WHITE, BLACK, RED, YELLOW, and GREEN. (This language will in turn evolve to stage 6, where a basic term for BROWN will be added.) The evolution of color categories is special in that it is monotonic: once a category "opens" in a language, it cannot then subsequently "close." Thus a given language can be assigned to a stage on the hierarchy based on the categories it has, and the categories it lacks.

A well-known problem case for the typology, which was commented on in the original Berlin and Kay monograph, is the Russian color system. It appears that Russian has developed a category that is absent from the typology, the term *goluboj* 'light blue'. In later work Corbett, Davies, and Morgan, using a number of recognized psycholinguistic tests, established the basic status of *goluboj.*[4] Once it has been established that the Russian color system is unusual, a natural next step is to explore the evolution of the Russian system in the context of its broader language family. We ask the question whether this innovative BLUE category is unique to Russian, or whether it is a property of a color system operating at a higher level, that is, whether it is a broader characteristic of Russian's family Slavonic. If other Slavonic languages do not have a second BLUE term, then the special position of Russian requires explanation. And if there is evidence pointing to two basic terms for BLUE, we have a second set of data for investigating the evolution of this unusual color system.[5]

In section 1 we discuss the notion of basic color term, and how to establish which of the many terms in a language's color vocabulary are the basic ones. Of particular interest is the test for psychological salience of a term. The revised basic color-term typology of Kay and McDaniel (1978) and Kay et al. (1997) is then briefly outlined. We then present the data on Slavonic basic color terms (section 2). We restrict our study to East Slavonic, the branch to which Russian belongs, which is genetically close. The "list task" (a test of psychological salience) was carried out on around thirty native speakers of Ukrainian and Belarusian. In

section 3, we discuss these results in the context of what has been established for Russian, particularly concerning the BLUE area.

1. Basic color terms

Of the set of terms denoting colors in a language, there is an identifiable subset that could be described as the "basic" set of terms. The idea of "basic object" belonging to a "basic level of categorization" is found in the cognitive-psychology literature. With color terms, the basic level of categorization follows from physiological reasons, from which constraints on possible categorization can be imposed. Moreover, these determine the evolutionary path a language takes in its development of basic color terms.

1.1. *Basic color terms and psychological salience*

Humans are categorizors, and objects in the real world are understood partly in terms of what category they fall into. Categories themselves are organized into taxonomies such as the one found in Figure 2. The category LEOPARD is superordinate in relation to SNOW LEOPARD and subordinate in relation to FELINE, which in turn is subordinate to the superordinate category MAMMAL.

What is interesting from a cognitive point of view is that within such taxonomies there appears to be some "basic level" of categorization where divisions between members and nonmembers are made most naturally. It is at this level that members of the same category are maximally similar to one another on the one hand, but maximally dissimilar to objects belonging to other categories at that level on the other. In our

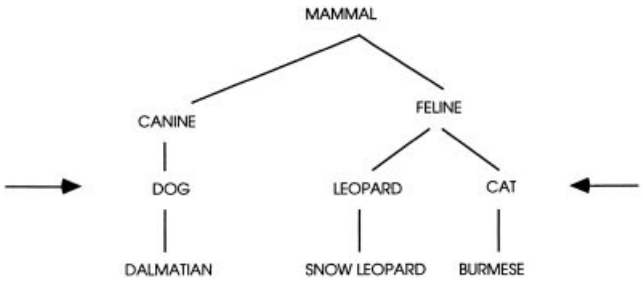

Figure 2. *A taxonomy of animal categories*

small animal taxonomy, the basic level is indicated by arrows. Members of the basic level category CAT share many more attributes than members of the superordinate category FELINE. At the same time, the attributes they have in common with members of categories at the same level of categorization, for example leopards and dogs, are few enough so that distinctions are easy to make between members and nonmembers. However, members of subordinate categories such as BURMESE and SIAMESE, while sharing even more attributes, share too many attributes to make obvious distinctions. The idea of "basic level of categorization" and "basic object" (a member of a basic-level category) comes from work in cognitive psychology experiments by Eleanor Rosch and her collaborators, among others.[6]

In the area of color terms, we can also assume that there is a subset of the available terms that could be viewed as the basic terms. Thus in English, among the terms RED, RUST, SCARLET, GINGER, BLUE we pick out RED and BLUE as the basic terms. Both appear to be at a level where it is both natural to identify members of a category (for example types of RED) and contrast them with members of another category at that level (for example types of BLUE). Berlin and Kay (1969: 6–7), working with the idea of basic color term, provide a list of criteria that can be used to characterize the basic terms. First, the term must be shown to be monolexemic, that is, the meaning is not derivable from the sum of its parts. This would rule out *sky blue* as a candidate for basic status. Second, the color it signifies must not be included in the signification of another basic term. The term *scarlet*, a kind of RED, cannot be basic. Third, it must apply generally and not be restricted to a limited number of objects, as is the case with *blond* and *ginger*, which denote hair color. The criteria, with examples taken from Russian, are given in Table 1.

A fourth test would be whether or not it is psychologically salient. In determining whether or not a color term is basic, it is assumed that there is a correlation between basicness and psychological salience. Evidence for a term being psychologically salient is its prominence in an elicited list, its occurrence in the ideolects of all informants, and the stability of

Table 1. *Criteria for basicness*

Criterion	Example of nonbasic term
Monolexemic	*jarko-zelënyj* 'bright green'
Not included in other term	*alyj* 'scarlet'
Not restricted	*karij* 'dark brown (for eyes)'

its reference across informants (Berlin and Kay 1969: 6). Tests for psychological salience fall into two broad categories (Corbett and Davies 1997). Behavioral tests include color-naming tasks and color-eliciting tasks. Linguistic tests include textual frequency of the terms and the size of a term's derivational family. The data we present are the result of one of the behavioral tests, the "list task", where color terms are elicited by asking informants to list as many color terms as they can think of within a specific stretch of time. The frequency of occurrence of a color term across informants and the order in which it occurs on the questionnaires are used as measures of the term's basic status. Higher frequency and greater prominence in the ordering correspond to greater likelihood that the term is basic.

1.2. *Constraints on color categorization and the evolution of basic color terms*

The physiological mechanisms that distinguish different wavelengths of light, and the interpretation of these distinctions as various color sensations,[7] are assumed to operate similarly across humans. Consistent across the species is the "automatic registration," or perception, of the six elemental colors WHITE, BLACK, RED, GREEN, YELLOW, and BLUE on which theories of universal color categorization rest (MacLaury 1991b: 42). Thus with color categorization, at any rate, there appears to be good physiological grounds for categorization taking the course that it does, and for the same basic categories emerging cross-linguistically. The original Berlin and Kay basic color term hierarchy in Figure 1 has been revised in light of further studies, notably Kay and McDaniel (1978). Instead of viewing category evolution as the successive lexical encoding of new foci, it is taken to be "the progressive differentiation of color categories" (Kay and McDaniel 1978: 617). Early stages contain color composites such as the warm composite WHITE/RED/YELLOW, containing multiple foci. Stages evolve along the lines of differentiation, such that a subsequent stage will distinguish WHITE from RED/YELLOW, and a stage subsequent to this one will distinguish RED and YELLOW. Fuzzy set theory is invoked to capture the fact that membership of a composite category is a matter of degree, where in our example of WHITE/RED/YELLOW focal white, focal red, and focal yellow have the highest degree of membership, and colors "falling in between" the foci have the lowest degree. Evolution of basic color categories progresses along the lines of decomposition of all composite categories into the six elemental ones, corresponding to the six fundamental neural response categories of white, black, red, green, yellow, and blue. The elemental

colors are then combined to form compound colors, such as BLUE and RED to form PURPLE. Other compound colours are ORANGE (YELLOW and RED), BROWN (BLACK and YELLOW), PINK (RED and WHITE), and GRAY (BLACK and WHITE). Again fuzzy set theory is used to express this, where a compound category is the fuzzy intersection of two elemental categories, allowing for best and worst examples of the compound category (highest and lowest degree of membership of the category).

Figure 3 gives a version of the revised typology as described in Kay et al. (1997). The general claims are that a cool composite category (BLACK/BLUE/GREEN) is opposed to a warm composite category (WHITE/RED/YELLOW). This opposition of cool and warm takes place at stage 1. Evolutionary stages 2 to 5 deal with decomposition into the elemental colors WHITE, RED, YELLOW (the warm elemental colors) and BLACK, GREEN, and BLUE (the cool elemental colors). Note that bold type denotes changes that occur at the current stage. For example stage 2 records the emergence of the elemental category WHITE and the composite category RED/YELLOW, in addition to the unaffected composite category from the previous stage BLACK/BLUE/GREEN. What is important for our discussion is how the elemental colors combine to form compound colors. Kay and McDaniel (1978: 638–641) assume that this occurs subsequent to all decomposition, and that BROWN is the first compound color to emerge at stage 6.[8] Important for our discussion is that Russian *goluboj* 'light blue' is speculated to be the combination of the elementals BLUE and WHITE (just as PINK is the combination of RED and WHITE).

Languages at the various stages have been identified in the World Colour Survey, and examples are given in Kay et al. (1997). For example, the Niger-Congo language Ejagham spoken in Nigeria and Cameroon is at stage 2, having a term for WHITE, *ébáré*, a term for RED/YELLOW,

[WHITE/RED/YELLOW (warm) BLACK/BLUE/GREEN (cool)] Stage 1

> [**WHITE RED/YELLOW** BLACK/BLUE/GREEN] Stage 2

> [**GREEN BLACK/BLUE** WHITE RED/YELLOW] Stage 3

> [**RED YELLOW** WHITE GREEN BLUE/BLACK] Stage 4

> [**BLACK BLUE** GREEN WHITE RED YELLOW] Stage 5

> [**BROWN** BLACK BLUE GREEN WHITE RED YELLOW] Stage 6

> [**PURPLE ORANGE PINK** BLACK BLUE GREEN WHITE RED YELLOW] Stage 7

Figure 3. *Revised Berlin and Kay*

ébí, and a term for BLACK/GREEN/BLUE, *ényàgá.* On the other hand, Martu-Wangka, a Pama-Nyungan language (Australia) represents a stage 4 language: the warm colors have fully decomposed with *piila-piila* for WHITE, *miji-miji* for RED, and *karntawarra* for YELLOW. However, the cool colors have not completed their decomposition: there is a term for GREEN, *yukuri-yukuri*, but *maru-maru* covers both BLACK and BLUE.

2. The Ukrainian and Belarusian list tasks

We examine Russian's unique color system from a diachronic perspective. This entails an investigation of the basic color terms of the other East Slavonic languages, Russian's sister languages, Ukrainian and Belarusian. Slavonic is typically divided into three main branches: East Slavonic, which includes modern-day Russian, Ukrainian, and Belarusian, West Slavonic (Czech, Slovak, Polish, Cassubian, Lower Sorbian, and Upper Sorbian), and South Slavonic (Slovene, Serbo-Croat, Bulgarian, and Macedonian).[9] From around the fourteenth to fifteenth century onward, we can start talking of differentiation among three East Slavonic languages, though Ukrainian as a standard literary language was not adopted until the nineteenth century, and Belarusian not until the twentieth century (Schenker 1995: 74). There are forty-five million speakers of Ukrainian (five million outside of Ukraine), and about seven million speakers of Belarusian (Schenker 1995: 74).

Native speakers of Ukrainian and native speakers of Belarusian were asked to perform the list task as a test of the psychological salience of the color terms of the respective languages. Psychological salience is then used as an indicator of a term's basicness. Two measures were used, and compared. The first measure is the frequency with which a term appears across informants: higher frequency correlates with high salience. The second measure is the "height" of the term on the informant's list of terms. The closer to the top of the list, or the "higher" the term, the more salient the term should be. For a discussion of these measures for psychological salience, see Corbett and Davies (1997), who compare data on American, Japanese, and Russian color terms and statistically match the results with the Berlin and Kay hierarchy. We look first at the results of the Ukrainian list task, then turn to Belarusian.

2.1. *Ukrainian list task*

The list task was carried out by a native speaker of Ukrainian, who conducted the task in Ukrainian. Thirty-four informants who took part

declared Ukrainian as their first language. The informants were from the University of Xarkiv, North East Ukraine.[10] The age group was 18 to 22 years, and all except one were female. About one hundred color terms were elicited. We first present results of frequency of occurrence of terms across informants, and then turn to the height on the list on which the

Table 2. *Rank frequency order of Ukrainian color terms (N = 34)*

Term	Gloss	Frequency occurrences	%	Rank
zelenyj	green	34	100	1.0
červonyj	red	33	97	2.0
bilyj	white	32	94	3.5
čornyj	black	32	94	3.5
synij	dark blue	31	91	6.5
koryčnjavyj[11]	brown	31	91	6.5
siryj	gray	31	91	6.5
roževyj	pink	31	91	6.5
žovtyj	yellow	30	88	10.0
blakytnyj	light blue	30	88	10.0
fioletovyj	purple	30	88	10.0
salatnyj[12]	light green	26	76	12.0
malynovyj	raspberry	22	65	13.0
žovtoharjačyj	orange	18	53	14.0
bordovyj[13]	bordeaux	17	50	15.0
beževyj[14]	beige	12	35	17.0
birjuzovyj	turquoise	12	35	17.0
vyšnevyj	cherry	12	35	17.0
purpurnyj[15]	purple	11	32	19.0
oranževyj	orange	10	29	20.0
rudyj	red (yellow)	9	27	21.0
holubyj	light blue	8	24	23.5
kaštanovyj	chestnut	8	24	23.5
zolotyj[16]	gold	8	24	23.5
burjakovyj	beet	8	24	23.5
bolotnyj	marsh green	7	21	26.0
kavovyj	coffee	6	18	29.0
sribljastyj	silvery	6	18	29.0
kremovyj	cream	6	18	29.0
sribnyj	silver	6	18	29.0
limonnyj	lemon	6	18	29.0
zolotisty	golden	5	15	34.0
temno-synij	dark blue	5	15	34.0
buryj	brown	5	15	34.0
lilovyj	lilac	5	15	34.0
metalyk	metallic	5	15	34.0

terms are elicited. Recall that higher frequency and greater height on the list correspond to greater likelihood of basic status.

2.1.1. *Frequency measure.* The frequency order of terms occurring at least five times is given in Table 2. The first two columns give the term and gloss. The occurrences of the term across the thirty-four informants (also recorded separately as a percentage) is then given, and the terms are ranked in frequency order. The table is divided into frequency "zones," delimited by the white space.

We can make a number of general observations, which will be discussed in more detail in section 3. First of all Berlin and Kay's basic color terms are represented by the top eleven ranking terms, with the notable exception of ORANGE. Second, there are two terms for ORANGE, neither of which appears among the top ranking terms (delimited by a line of white space). The first, *žovtoharjačyj*, a compound term literally meaning 'burning yellow', is ranked fourteenth, with a frequency of 53%; the second, *oranževyj*, is ranked lower (twentieth) with a frequency of 29%. Third, while two terms for ORANGE fall outside of the top frequency group, there are three terms for BLUE, two of which fall within this group. These are *synij* 'blue', and *blakytnyj* and *holubyj* 'light blue'.[17] The first two, *synij* and *blakytnyj*, both appear in the top frequency zone and have nearly identical frequencies: *synij* occurs 31 times, and *blakytnyj* 30 times.

Finally, there is an identifiable group of highly frequent nonbasic terms, headed by *salatnyj* 'light green' with a frequency of 76%. It is divided from the other nonbasic terms: the difference between the frequency of *bordovyj* 'bordeaux', the lowest member of this group, and *beževyj* 'beige', the highest member of the next group, is fifteen percentage points.

2.1.2. *Height-on-list measure.* Using the list task, a second measure of basicness is the position the color term occupies in the ordered list of terms on the questionnaire. The higher the position, or the nearer the term is to the top of the list, the stronger the evidence that it is a basic term. The highest position is position 1. We give two kinds of data for the height-on-list measure. Table 3 shows which terms occupy the highest place on the list, and how many times a term occupies the first position. Terms are then ranked according to the frequency with which they occur at this highest positon. For example, the top ranking color term is *bilyj* 'white', which appears highest on the lists of ten informants; bottom ranking is *zelenyj* 'green', which a single informant placed at the top of her list.

We note the following. First, the set of terms occupying the highest place on a list (Table 3) is a subset of the terms found within the top

Table 3. *Color terms occupying the highest place on the list*

Color term	Gloss	Informants with term at top of list	Rank
bilyj	white	10	1.0
čornyj	black	5	2.5
roževyj	pink	5	2.5
žovtyj	yellow	4	4.5
blakytnyj	light blue	4	4.5
červonyj	red	3	6.0
synij	blue	2	7.0
zelenyj	green	1	8.0

frequency zone of Table 2. Thus only Berlin and Kay basic color terms appear first in an informant's list. Second, this set includes the elemental color categories (see section 1.2). In other words, all the elemental colors are being used by at least one informant as the first-choice color term. Third, two BLUE terms, *synij* and *blakytnyj*, which appear in the top frequency zone in Table 1, also occupy the highest place on several informants' lists.

As well as looking at terms that occupy the highest place on an informant's list, we can also rank the terms according to their average place on a list across all informants. High-ranking terms will be those whose mean is closest to 1, in other words the first place on the list. This is shown in Table 4, where on average the term *červonyj* 'red' is between the fourth and fifth term to appear on an informant's list of terms, and as such represents the highest-ranking color term for this measure.[18]

The eleven top-ranking color terms in the frequency measure (see Table 2) are also the eleven top-ranking terms in the list position measure, all Berlin and Kay basic terms. There are differences in ordering among these eleven terms, however. Further, zones paralleling the frequency zones in Table 2 have emerged. The eleven top-ranking terms appear in the first zone, followed by a zone of strong nonbasic terms that include *malynovyj* 'raspberry', *žovtoharjačyj* 'orange', *salatnyj* 'light green', and *bordovyj* 'bordeaux', in turn followed by a zone of weaker nonbasic terms. It should also be noted that within the eleven top-ranking terms appear two terms for BLUE, *synij* and *blakytnyj*, the two terms highlighted in our discussions relating to Tables 2 and 3. As in the frequency measure, they behave similarly to one another: *synij* has an average list position of 7.5 and *blakytnyj* has 7.3, and they are ranked sixth and fifth respectively. Finally, the mean list position measure matches the frequency measure with regard to the ORANGE category. There are two terms, *oranževyj* and *žovtoharjačyj*, both falling outside of the top zone.

Table 4. *How terms are distributed across list positions*

Term	Gloss	Average place on list	Rank
červonyj	red	4.5	1.0
bilyj	white	6.5	2.0
zelenyj	green	6.8	3.0
roževyj	pink	7.1	4.0
blakytnyj	blue	7.3	5.0
synij	blue	7.5	6.0
žovtyj	yellow	7.6	7.0
čornyj	black	8.9	8.0
fioletovyj	purple	9.1	9.0
siryj	gray	11.4	10.0
koryčnevyj	brown	12.5	11.0
malynovyj	raspberry	13.7	12.0
žovtoharjačyj	orange	14.0	13.0
salatnyj	light green	15.8	14.0
bordovyj	bordeaux	16.1	15.0
holubyj	blue	17.0	16.0
oranževyj	orange	17.8	17.0
birjuzovyj	turquoise	18.0	18.0
buzkovyj	lilac	18.4	19.5
purpurnyj	purple	18.4	19.5
beževyj	beige	19.3	21.5
zolotyj	gold	19.3	21.5
vyšnevyj	cherry	19.4	23.5
burjakovyj	beet	19.4	23.5
kremovyj	cream	19.9	25.0
lilovyj	lilac	20.3	27.0
buryj	brown	20.3	27.0
kaštanovyj	chestnut	20.3	27.0
kavovyj	coffee	20.6	29.0
bolotnyj	marsh green	20.7	30.0
rudyj	red-yellow	20.8	31.0
limonnyj	lemon	20.9	32.5
metalyk	metallic	20.9	32.5
sribljastyj	silver	21.0	34.0
sribnyj	silver	21.1	35.0

As with the frequency measure, *žovtoharjačyj* is the stronger term: it is ranked thirteenth and has an average list position of 14, whereas *oranževyj* is ranked seventeenth with average list position of 17.8.

Using the list task as a test of psychological salience, there is evidence that Ukrainian has ten of the eleven Berlin and Kay basic color terms, where ORANGE is the missing category. At the same time it has two basic terms for BLUE, *synij* and *blakytnyj* 'light blue'. We now turn to examine the situation in Belarusian.

2.2. *Belarusian list task*

The list task was carried out on twenty-eight Belarusian speakers from the Belarus State Economic University in Minsk, all of whom stated they could also speak Russian.[19] Sixteen entered Belarusian as their first language, and twelve as their second language (with Russian first). The questionnaire was written in Belarusian,[20] and all subjects used Belarusian in their answers. The age range was seventeen to twenty-one years. The task elicited 74 different terms.

2.2.1. *Frequency measure.* The frequency order of terms occurring at least three times among all subjects is given in Table 5. Some of the informants considered Belarusian to be their second language, with Russian as the first. It is important to distinguish the first language speakers, and these are indicated in Table 4 in the column "Bel = 1." The

Table 5. *Frequency order (for "all" n = 28 and "Bel = 1" n = 16)*

Term	Gloss	Frequency occurrences		%		Rank	
		all	Bel = 1	all	Bel = 1	all	(Bel = 1)
zjalëny	green	28	16	100	100	1.0	(1.5)
bely	white	27	15	96	94	2.5	(4.0)
čyrvony	red	27	16	96	100	2.5	(1.5)
čorny	black	26	15	93	94	4.0	(4.0)
žoŭty	yellow	25	15	89	94	5.0	(4.0)
ružovy	pink	25	14	89	88	6.0	(7.5)
sini	blue	24	13	86	81	7.5	(9.0)
blakitny	light blue	24	14	86	88	7.5	(7.5)
šèry/sery	gray	23	14	82	88	9.0	(7.5)
fijaletovy	purple	22	14	79	88	10.0	(7.5)
karyčnevy	brown	15	7	54	44	11.0	(11.0)
aranžavy	orange	9	5	32	31	12.0	(12.0)
bežavy	beige	6	1	21	6	13.0	(21.5)
haluby	light blue	5	4	18	25	14.5	(13.0)
zalaty	gold	5	3	18	19	14.5	(16.0)
bury	brown	4	2	14	13	18.5	(19.5)
purpurovy[21]	purple	4	2	14	13	18.5	(19.5)
lilovy	lilac	4	3	14	19	18.5	(16.0)
salatvy	light green	4	3	14	19	18.5	(16.0)
srèbrany	silver	4	3	14	19	18.5	(16.0)
biruzovy[22]	turquoise	4	0	14	0	18.5	(23.0)
hranatovy	bright red	3	3	11	19	22.5	(16.0)
zolocisty	golden	3	1	11	6	22.5	(21.5)

rank ordering of this group is indicated separately, in the last column (''Bel = 1''). There are slight differences in ranking, but these are not significant: both share the top twelve most frequent terms.

The first observation is that within the top frequency zone all the elemental categories are included, and additionally three compound categories, PINK, PURPLE, and GRAY. It should be noted that the terms *šèry* and *sery* are taken to be alternates. They are mentioned in the Lexical Atlas (1993–1998) (volume 4, map 4). Very generally, the term *sery* is dominant in the dialects south of Minsk and part of the central dialects from Mahilëŭ down to Homel′, where *šèry* dominates the central and northern dialects (see Mayo 1983: 943 for a summary of Belarusian dialects). Treating these forms as alternants is supported by the fact that no subject used both forms.[23] Second, two terms for BLUE have been elicited, *sini* and *blakitny.* Both appear in the top frequency zone, and both have exactly the same number of occurrences, twenty-four (86%). The term *blakitny* means 'light blue, sky blue' (cf. Ukrainian *blakytnyj*).[24] Third, the term *karyčnevy* 'brown' is stranded in a frequency zone between the highest and lowest frequency terms. The difference between it and the lowest of the high-frequency terms, *fijaletovy* 'purple', is 25 percentage points, and the difference between it and the highest of the low-frequency terms, *aranžavy* 'orange', is 22 percentage points. This puts a question mark over the basic status of the term. Finally, there is a term for ORANGE, *aranžavy*, but it falls outside the second frequency zone. This strongly suggests that Belarusian, like Ukrainian, lacks a basic ORANGE category.

2.2.2. *Height-on-list measure.* As with Ukrainian, we examine which of the terms appears at the top of an informant's list, and how many times it appears here across all informants. Table 6 shows for example that *čyrvony* 'red' was listed first by sixteen informants.

Table 6. *Color terms occupying the first position*

Color term	Gloss	Informants with term at top of list	Rank
čyrvony	red	16	1.0
čorny	black	4	2.5
bely	white	4	2.5
ružovy	pink	2	4.0
žoŭty	yellow	1	5.5
šèry	gray	1	5.5

As with the Ukrainian data only Berlin and Kay's basic categories are represented. These are both elemental, for example *čyrvony* 'red', and compound, for example *ružovy* 'pink'. Only one elemental category is "missing" as it were: BLUE.

In Table 7 we give the average list position of all the terms appearing at least three times: in other words, the place a term occurs on an informant's list when all informants' lists are taken into consideration.

From Table 7 we can note the following. First, the eleven top-ranking terms according to frequency (Table 5) match the top eleven according to average list position. These are all Berlin and Kay basic color categories. Note how *karyčnevy* 'brown' again appears at the bottom of this ranking, but, unlike the frequency measure, there are grounds for including it along with the other putative basic terms, as it is close to the term ranked above it (*šèry* 'gray') but sharply divided from the term ranked below it (*aranžavy* 'orange'). Hence from this second measure there is

Table 7. *Average list position for Belarusian*

Term	Gloss	Average place on list	Rank
čyrvony	red	2.4	1.0
bely	white	4.1	2.0
čorny	black	4.3	3.0
zjalëny	green	5.6	4.0
blakitny	blue	6.2	5.5
žoŭty	yellow	6.2	5.5
ružovy	pink	6.8	7.0
sini	blue	7.6	8.0
fijaletovy	purple	9.5	9.0
šèry	gray	10.4	10.0
karyčnevy	brown	10.8	11.0
aranžavy	orange	12.3	12.0
sery	gray	12.6	13.0
haluby	light blue	13.1	14.5
lilovy	lilac	13.1	14.5
srèbrany	silver	13.4	17.0
bežavy	beige	13.4	17.0
biruzovy	turquoise	13.4	17.0
zolocisty	gold	13.6	19.0
salatavy	light green	13.7	20.0
hranatovy	bright red	13.8	22.0
bury	brown	13.8	22.0
purpurovy	purple	13.8	22.0
zalaty	gold	14.6	24.0

evidence that it is basic; this underlines the fact that both measures, frequency and list position, need to be taken into account. Second, two terms for BLUE, *sini* and *blakitny*, appear within the top-ranking zone, paralleling the frequency measure. Finally, as with the frequency measure, the term *aranžavy* falls outside the top-ranking group of terms, suggesting again that Belarusian lacks the category ORANGE.

To summarize, we have evidence from the list task that Belarusian has all of the Berlin and Kay basic color terms except for ORANGE. In addition to the basic BLUE term *sini* it has the term *blakitny* 'light blue', which also appears to be basic.

3. Discussion: East Slavonic BLUEs

Our investigation into the East Slavonic languages Ukrainian and Belarusian was prompted by a curiosity of the Russian color system, namely that Russian has two basic BLUE terms. In this section we outline the Russian color system, based on Corbett and Morgan (1988) and Davies and Corbett (1994), and then discuss the color systems of Ukrainian and Belarusian with regard to the BLUE category. Our findings constitute strong evidence that these other East Slavonic languages have also innovated a second BLUE term. There are two major questions that arise from our findings. First, is it possible that the second BLUE term is a borrowing of a category separate from the term that denotes it? And second, what can we learn about the evolutionary path of the second BLUE category? Answers to these questions shed light on Russian's development of a second BLUE category.

3.1. *Russian basic color terms: an outline*

Russian has innovated a second BLUE category: Russian has two basic terms, *sinij* 'dark blue' and *goluboj* 'light blue'. That both terms are basic has been confirmed by Corbett, Davies, and Morgan in a number of psycholinguistic experiments. These have included behavioral tests, such as the list task and color-naming tasks, as well as linguistic tests, such as examination of textual frequency. In Appendix 1 of Corbett and Davies (1997) they conclude from their findings that Russian has twelve basic color terms, with two BLUE terms. They list them as follows:

belyj 'white', *černyi* 'black', *krasnyj* 'red', *zelenyj* 'green', *želtyj* 'yellow', *sinij* 'dark blue', *goluboj* 'light blue', *koričnevyj* 'brown', *fioletovyj* 'purple', *rozovyj* 'pink', *oranževyj* 'orange', *seryj* 'gray'

Some of their findings are discussed in Corbett and Morgan (1988) and Davies and Corbett (1994), which we briefly look at in relation to *sinij* and *goluboj.*

3.1.1. *Russian list task.* Corbett and Morgan (1988) report on a list task carried out on seventy-seven native speakers of Russian in Moscow. The results are given in Table 8.[25] These show that both BLUE terms appear within the top twelve terms (*sinij* is ranked highest, with a frequency of 99%, and *goluboj* is ranked fourth equal with a frequency of 95%). Moreover, there is a clear cut-off point between the claimed Berlin and Kay basic terms and the highest-ranking nonbasic term: there is a 17-point difference between *rozovyj* 'pink' and *sirenevyj* 'mauve', showing that the two BLUEs are comfortably within the basic group.

3.1.2. *Russian textual frequency test.* Another measure of psychological salience of a term is its textual frequency.[26] Corbett and Morgan (1988) calculated textual frequency using Zasorina's (1977) frequency dictionary of a corpus of one million tokens. Their results are given here in Table 9, ranked according to frequency. Again, both *sinij* and *goluboj*

Table 8. *Results of the Russian list task (Davies and Corbett 1994: 73) (N = 77)*

Term	Gloss	Frequency occurrences	as %	Rank
sinij	dark blue	76	99	1.0
krasnyj	red	75	97	2.5
zelënyj	green	75	97	2.5
žëltyj	yellow	73	95	4.5
goluboj	light blue	73	95	4.5
čërnyj	black	71	92	6.0
fioletovyj	purple	69	90	7.0
oranževyj	orange	67	87	8.0
belyj	white	66	86	9.5
koričnevyj	brown	66	86	9.5
seryj	gray	60	78	11.0
rozovyj	pink	53	69	12.0
sirenevyj	mauve	40	52	13.5
salatovyj	salad green	40	52	13.5
bordovyj	bordeaux	38	49	15.0
malinovyj	raspberry	37	48.5	16.5
beževyj	beige	37	48.5	16.5
birjuzovyj	turquoise	34	44	18.0
limonnyj	lemon	21	27	19.0
purpurnyj	purplish red	20	26	20.0

Table 9. *Textual frequency of* sinij *and* goluboj

Color term	Gloss	No. of occurrences	Rank frequency
čërnyj	black	473	1
belyj	white	471	2
krasnyj	red	371	3
zelënyj	green	216	4
sinij	dark blue	180	5
goluboj	light blue	137	6
seryj	gray	116	7
žëltyj	yellow	109	8
rozovyj	pink	49	9
buryj	brown	31	10
koryčnevyj	brown	23	11
fioletovyj	purple	22	12
oranževyj	orange	15	13
bagrovyj	crimson	13	14
lilovyj	lilac	12	15

appear well within the high-frequency group, more evidence that they are basic terms.

3.1.3. *Russian color-naming task.* Davies and Corbett (1994) present their results of a color-tile-naming experiment conducted in Moscow involving 54 native speakers of Russian. The 65 color tiles used were a representative sample of the color space. For exact details of the stimuli see Davies and Corbett (1994: 69–71). The results constitute strong evidence that both *sinij* and *goluboj* are basic terms. Table 10 gives their results (based on Table 4 of their paper).[27] They are using consensus across informants of a term and the tile it may denote as a measure of the term's basicness. In the table, terms are ranked according to consensus, which is calculated as the ratio of the number of times a term is used and the number of tiles the terms has been used to name. The top-ranking term is *belyj*, since all of its 54 occurrences are used to name a single tile, showing 100% consensus across the 54 informants. From the table we see that according to the tile-naming consensus measure, both *goluboj* and *sinij* are ranked within the first twelve terms (ranked ninth and eleventh respectively).

In conclusion, these findings should be viewed as strong evidence that Russian has two BLUE terms, *sinij* meaning 'dark blue' and *goluboj* meaning 'light blue'.

Table 10. *Tile naming and consensus ranking*

Color term	Gloss	No. of occurrences	No. of tiles	No. of occurrences/ no. of tiles	Consensus rank
belyj	white	54	1	54.00	1
koričnevyj	brown	148	5	29.60	2
seryj	gray	245	9	27.22	3
želtyj	yellow	131	5	26.20	4
zelenyj	green	314	12	26.17	5
oranževyj	orange	178	8	22.25	6
krasnyj	red	108	5	21.60	7
černyj	black	43	2	21.50	8
goluboj	light blue	126	6	21.00	9
rozovyj	pink	161	9	17.89	10
sinij	dark blue	181	12	15.08	11
salatovyj	salad green	45	3	15.00	12
sirenevyj	mauve	158	11	14.36	13
fioletovyj	purple	172	13	13.23	14
malinovyj	raspberry	81	7	11.57	15
birjuzovyj	turquoise	35	7	5	16

3.2. *Ukrainian and Belarusian BLUEs*

The results of the list task for both Ukrainian and Belarusian strongly suggest that these languages have two basic terms for BLUE. Ukrainian has *synij* 'blue' and *blakytnyj* 'light blue', and Belarusian has *sini* 'blue' and *blakitny* 'light blue'. This in the context of both languages having all the Berlin and Kay basic color terms, except for ORANGE. Table 11 gives the behavior of the two BLUE terms for Ukrainian and Belarusian (see previous tables). They are noted for how they perform in frequency, mean list position, and the possibility of appearing at the top of an informant's list of colors. For the frequency and mean list position

Table 11. *Comparing the two BLUEs in Ukrainian and Belarusian*

	Frequency	Ranking	Mean list position	Ranking	Heads a color list?
Ukrainian	(N = 34)				
synij	31	6.5	7.5	5.0	yes
blakytnyj	30	10.0	7.3	6.0	yes
Belarusian	(N = 28)				
sini	24	7.5	8.6	8.0	no
blakitny	24	7.5	6.2	5.5	no

measures, the ranking of the term is given, showing that for both languages the two BLUE terms appear among the top-ranking terms, using either the frequency measure or the list position measure.

The table also shows that for each language the two BLUE terms behave similarly. For the frequency measure, Ukrainian *synij* and *blakytnyj* differ by a single occurrence. And in Belarusian, *sini* and *blakitny* occur the same number of times, sharing the same rank position (seventh equal). When we move to mean list position, we see that the two terms in Ukrainian are nearly identical and are ranked side by side. This is less clear for Belarusian from the table, yet if we go back to Table 7, we see that *sini* is separated from *blakitny* by only two terms, *žoŭty* 'yellow', which shares *blakitny*'s mean list position of 6.2, and *ružovy* 'pink', which has a list position of 6.8. Finally, considering whether the two terms appear at the top of a list, we see that where this possibility is open for one term it is also open for the other. Thus for Ukrainian both *synij* and *blakytnyj* appear at the top of the list, but in Belarusian no informants listed either *sini* or *blakitny* as the first term.

3.3. *The second BLUE category in East Slavonic*

The findings are suggestive of a second BLUE category not only for Russian but also for its sister languages Ukrainian and Belarusian. We examine the implications of claiming that there are two BLUEs in East Slavonic.

3.3.1. *The second BLUE: separating category from term.* Russian's second term for BLUE, *goluboj*, is a form that goes back to Old Russian, the East Slavonic ancestor language (eleventh to fourteenth centuries). It is derived from the word for pigeon *golub′*. It originally meant 'gray, blue' and was restricted in its use, denoting colors of animals (Baxilina 1975: 194). Later this term took on an additional meaning, 'light blue', and could refer to fabrics and materials (examples found from end of the sixteenth century; see Barxudarov 1977: 70). Examples of its present-day use and meaning are found in the literature of the seventeenth and eighteenth centuries onward (see Baxilina 1975: 195–197). The term is found in both Ukrainian and Belarusian, indicating that it has been inherited by these two languages from Old Russian, that is, Common East Slavonic, the ancestor language of Russian, Ukrainian, and Belarusian. However, unlike the psychological salience tests for Russian (section 3.1), which clearly show that *goluboj* is basic in Russian, our tests for Ukrainian and Belarusian indicate that though this term is

elicited, it is not basic in either language. How the term performs is charted in Table 12. The performance of Russian *goluboj* in Corbett and Morgan's list task (see Table 8) is included for comparison.

Table 12 shows how the term performs on the frequency and mean list position measure, for both languages. The ranges for high-frequency terms and high-list-position terms are given for comparison. When we compare the frequency of Ukrainian *holubyj* (column 1) with the frequency range covered by the most frequent Ukrainian color terms (column headed "Frequency of high-ranking terms"), we see that it falls well outside of this range (24% compared to the bottom-of-the-range figure 88%). Belarusian *haluby* similarly falls well short of the range of Belarusian high-frequency terms. We find the same situation obtaining for both languages with the mean list position. Ukrainian *holubyj* falls outside of the 4.5–12.5 range of high-ranking Ukrainian terms (column headed "Mean of high-ranking terms"), and similarly Belarusian *haluby.* Finally, for both languages the term is never ranked higher than fourteenth, and the lowest ranking is twenty-third equal (Ukrainian *holubyj*). This is in striking contrast to Russian *goluboj*, ranked fourth equal in the list task according to the frequency measure.

Thus a term used for the second BLUE category in Russian, which goes back to East Slavonic, is not found fulfilling this function in the other East Slavonic languages. Instead an alternative term *blakytnyj* (Ukrainian)/*blakitny* (Belarusian) is used for the second BLUE. This term is a borrowing of Polish *błękitny*, glossed in contemporary Polish dictionaries as simply 'blue' and noted by Rothstein (1993: 753) as the poetic synonym of the basic BLUE term *niebieski.* However, it is a relatively old borrowing, being found in the Ukrainian and Belarusian word stock from the sixteenth century, where it is used chiefly to describe fabrics and garments.[28] According to Zaręba (1954: 47–49) the semantics of Polish *błękitny* took the following course: name of a kind of material

Table 12. *Performance of Ukrainian* holubyj *and Belarusian* haluby

	Frequency (as %)	Frequency of high-ranking terms	Rank	Mean list position	Mean of high-ranking terms	Rank
Ukrainian holubyj	24	100–88	23.5	17.0	4.5–12.5	16.0
Belarusian haluby	18	100–79	14.5	13.1	2.4–10.8	14.5
Russian goluboj	95	99–69	4.5	–	–	–

(Late Latin *blanchetus* 'panni genus albi, candidi'), then the color describing that material 'light, unsaturated', then a term used to describe specifically light-blue material. Later it was used, alongside *modry*, as the general blue term before *niebieski* took over as the basic term (beginning from the eighteenth century). It came into Ukrainian and Belarusian in the sixteenth century as a term for describing fabrics, with the meaning 'light blue'.[29] There are two important facts to note about the borrowing of this term. First, it was not a borrowing of the basic BLUE term: Polish had *modry* as basic BLUE, and only later did *błękitny* begin to compete for this slot, at any rate after the borrowing had taken place. Second, nor was this a borrowing of a basic second BLUE term: there is no evidence that Polish has ever had a second BLUE, for which *błękitny* could have been the basic term; rather, *błękitny* lost the 'light blue' meaning over the course of time and took on the more general meaning. We are therefore left with the prospect that, under the sway of the Russian color system, Ukrainian and Belarusian borrowed Russian's innovative category, the second BLUE, but not Russian's basic term for that category, *goluboj*.

This opens up the possibility that a category, in this case the second BLUE, may be borrowed separately from the basic term that denotes it. However, the separation of category from term in the process of borrowing is not the usual course of events. As an example, we can consider Ukrainian *koryčnevyj* (alternant *koryčnyavyj*), which from the evidence of the list task looks to be the basic term for BROWN (both from the frequency measure, Table 2, and the list-position measure, Table 4). This is a borrowing from Russian *koryčnevyj* that has latterly become the basic BROWN term (see its strong performances in the Russian list task and color-naming task, Tables 8 and 10). Ukrainian, on the other hand, has had several BROWN terms: *brunatnyj*, *cinamonovyj*, and the East Slavonic term *buryj* (Table 13). Priestly (1987) notes an additional one, *bronzovyj* (the term that emerged during his list task carried out on 12 Ukrainian speakers resident in North America). Dictionaries dating before the first half of the twentieth century give one of these as the primary meaning.[30] The confusion surrounding the category prompts Shevelov (1993: 992) to claim that for BROWN "there is no generally accepted term." Most of these terms are elicited in the list task, and their performances are shown in Table 11. Clearly, the borrowed term *koryčnevy* is the strongest candidate among them for basic status.

In the case of BROWN, then, a term has been borrowed from Russian, along with its basic status. In other words, the term has not been separated from the category it denotes, making the situation with the second BLUE look particularly striking.

Table 13. *Contending BROWN terms in Ukrainian (N = 34)*

Term	Frequency occurrences	%	Rank (among BROWN terms)
koryčnjavyj/koryčnevyj	31	91	1
buryj	5	15	2
brunatnyj	2	6	3
bronzovyj	1	3	4
cinamonovyj	0	0	5

However, this appears less striking if we consider that terms and categories may well be separated in the history of a language. Shields, writing on Indo-European color terms, notes that for RED Indo-European has **reudh*- yielding Greek *eruthros*, Latin *ruber*, etc., but among the Indo-European languages no cognates for WHITE and BLACK are to be found (Greek has *leukos*, Latin *albus*, etc.). He notes that this is not evidence against Berlin and Kay but simply a consequence of "lexical replacement":

> … it is well known that members of the "basic core vocabulary" (like colour terms) of a language are lost and replaced by other (generally semantically related) forms as time passes (Shields 1979: 143).

In other words, the evolution of the categories operates independently of the shifts in basic status of the terms themselves. We do not need to look far for an example of lexical replacement in Slavonic. We can consider the basic category RED in East Slavonic. In Ukrainian and Belarusian the term used is *červonyj* and *čyrvony* respectively, a basic term confirmed by the results of the list task (see Tables 2 to 7). Russian, however, has the basic term *krasnyj* (confirmed as basic by the tests carried out by Corbett, Davies, and Morgan; see Tables 8 to 10). Yet the ancestor language Old Russian has *čьrvlenь* (alternate *čьrvenь*), a form inherited by all three East Slavonic languages, used for basic RED by Ukrainian and Belarusian, but not by Russian. Moreover, the Russian *krasnyj* is fairly recent as a color term, not denoting basic RED until the end of seventeeth century (Baxilina 1975: 80). Separate terms may at first suggest that Russian developed the RED category independently from Ukrainian and Belarusian, but the facts turn out otherwise. Common Slavonic had *čьrvlenь*/*čьrvenь* for basic RED (see Herne (1954: 32–48; Schenker 1993: 111), but later Russian used a different term to cover this same category.

One final question is why this separation of category and term should have taken place in the borrowing of the second BLUE from Russian. A possible answer is found in the term *goluboj* itself. As we noted, the East Slavonic term originally meant 'gray (blue)' and was a restricted term, used to denote the color of animals. This original meaning has been inherited by the other East Slavonic languages, Belarusian and Ukrainian. By the time Russian had innovated the second BLUE category, Belarusian and Ukrainian already had available a term with a much more appropriate semantics, *blakytnyj* 'light blue'.

In sum, the influence of Russian on its sister languages Ukrainian and Belarusian has led to the spreading of Russian's unusual color system. The innovative second BLUE category has been adopted throughout East Slavonic. Moreover, the very nature of this process says something about the category itself: since the category has been borrowed separately from its term, we have evidence of a different kind that the Russian color system does indeed include a second BLUE, a category absent from Berlin and Kay: the category is salient enough to be borrowed separately from the term that denotes it.

3.3.2. *The second BLUE and category evolution.* Kay and McDaniel's (1978) revision of the Berlin and Kay typology is important for the evolutionary predictions of the typology (see section 1.2). Later stages involve the combination of elemental categories to yield new compound categories. The development of compounds other than the original four cited in Berlin and Kay is therefore theoretically possible, such that the evolutionary process may be taken beyond the basic eleven categories:

> There is no apparent reason to believe that the process will not continue, extending basic color term lexicons beyond their present 11 terms (Kay and McDaniel 1978: 640).

The second BLUE in Russian, *goluboj* 'light blue', is given as an example of a possible twelfth term, the combination of BLUE and WHITE. Corbett and Davies have established the basic status of *goluboj*, and the Ukrainian and Belarusian findings here constitute strong evidence of a second BLUE in the other members of East Slavonic. In Russian *goluboj* came to denote basic LIGHT BLUE at a stage after BROWN (denoted by *buryj*) and before the evolution of the later compound color categories: the earliest compound term *rozovyj* 'pink' is borrowed into Russian from German in the eighteenth century (Vasmer 1986), a century after *goluboj* acquires the meaning 'light blue'. For Belarusian and Ukrainian, evidence from the list task suggests that LIGHT BLUE emerged before ORANGE.

Belarusian *aranževyj* falls just outside the top ranking group of colors for both the frequency and list-position measure. Ukrainian has two terms, *žovtoharjačyj* and *oranževyj*, but neither appears within the top-ranking group for either measure.

The indication is that the second BLUE may emerge before the completion of the set of eleven categories cited in Berlin and Kay. In other words, it does not have to be the "twelfth basic color term" as Kay and McDaniel speculate (1978: 640). There is some evidence that besides Russian (and its East Slavonic sister languages) a few languages have a second BLUE term. An interesting question is whether in such cases the term is the twelfth basic term, or whether it has emerged ahead of the recognized eleventh Berlin and Kay basic terms. Languages which may have a second BLUE term include Guatemalan Spanish (Harkness 1973), Nepali (Bolton et al. 1980), and Italian (Vincent 1983).[31] One particularly strong contender is Turkish, which has been extensively investigated using the color listing and naming task. The term for elemental BLUE in Turkish is *mavi*. Özgen and Davies (1998) explored the possibility of a putative second BLUE term, *lacivert* 'dark blue', which if basic would be viewed in the Kay and McDaniel framework as a compound category made up of elemental BLUE and BLACK (Özgen and Davies 1998: 951). The listing and naming tasks were carried out on a substantial sample of children and adults from Istanbul and Fethiye.[32] For the color-naming task, two measures were used as indicators of basicness, frequency of a term used to name a tile, and agreement among informants that the choice of a term to name a tile is correct. The findings are summarized in the form of general ranking of terms when all these meaures have been computed. For both the child and adult samples there is evidence that Turkish has the eleven recognized Berlin and Kay basic color terms, ranked 1 to 11. At the same time, the term *lacivert* ranks twelfth for both groups (see their Table 8, Özgen and Davies 1998: 943). The tentative conclusion is that if *lacivert* is basic, its basic status is emergent, whereas the basic status of the other eleven terms is firmly established. Hence for Turkish the second BLUE comes after the recognized eleven basic categories have developed.

In sum, we appear to have three distinct color systems with reference to the development of the second BLUE category. In the first system, represented by Russian, this category is the first compound category to emerge after BROWN. In the second system, represented by Ukrainian and Belarusian, the second BLUE category is not the last compound category to emerge (ORANGE is at best emergent). Finally, Turkish represents the third system, where the second BLUE category has waited for the other recognized categories to be established. These three systems

are naturally accounted for in the typology if we consider the second BLUE to be a compound category, which, following Kay and McDaniel, is either the intersection of BLUE and WHITE (Russian *sinij*, Ukrainian *blakytnyj*, Belarusian *blakitny*) or the intersection of BLUE and BLACK (Turkish *lacivert*). It is assigned to the set of compound colors that develop from stage VII. A property of this set is that there is no ordering within the set, reflecting the different orderings in the three systems described above. At the same time, a precondition is the emergence of BROWN, which is met by each of our examples.

4. Conclusions

In examining whether the innovative second BLUE category is unique to Russian, or whether it is a broader characteristic of Russian's family, Slavonic, we have produced some evidence, using a recognized psycholinguistic test, that both Ukrainian and Belarusian have two basic terms for BLUE. The first term is inherited from East Slavonic *sinij* denoting '(dark) blue', and the second is a borrowing from Polish *błękitny*, which in both languages means 'light blue'. Though Russian has influenced the development of the Ukrainian and Belarusian color systems in this way, the Russian basic term itself, *goluboj*, has not been borrowed. It appears that a category, in this case the second BLUE, may be borrowed separately from the basic term that denotes it. Thus the evolution of categories operates independently of the shifts in basic status of the terms themselves. The separation of the term from the category is further evidence, and evidence of a different kind, that Russian does indeed have two BLUE categories, since the category is salient enough to be borrowed separately from the term that denotes it. Finally, among the languages that have this category, its development differs with respect to other compound categories except for BROWN, which is always prior. This can be accounted for by assigning it to the compound color categories that evolve from stage VII. Thus in principle it may be the first stage VII compound category to emerge, as in Russian, or the last, as in Turkish, or somewhere in between, as in Ukrainian and Belarusian.

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Notes

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2. See for example the papers in Hardin and Maffi (1997).
3. Uppercase is conventionally used for color categories, as distinct from color terms.
4. A summary of their work on the Russian color system, mentioning the key references, can be found in Appendix 1 of Corbett and Davies (1997). Moreover, their evidence that the PURPLE category is not fully established in Russian indicates that the second BLUE is not the twelfth term, as Kay and McDaniel (1978) speculate. We will return to this in section 3.3.2.
5. The Slavonic language family is genetically close and therefore provides an interesting area for the study of color category evolution. See Hippisley and Gazdar (2000) for discussion, and a computable model for the reconstruction of Proto-Slavonic basic color terms (and the stages leading up to it) that assumes the Slavic basic color terms outlined in Comrie and Corbett (1993).
6. See Rosch et al. (1976), Rosch (1978), and discussions in MacLaury (1991a).
7. See Wooten and Miller (1997) and Abramov (1997) for good summaries of the physiology and psychophysics of color sensation.
8. Note, however, that the emergence of compound colors after the decomposition of the composites into elements is a tendency rather than an absolute rule. Kay et al. (1991: 18) report on the possibility of BROWN and PURPLE appearing before complete decomposition has taken place.
9. See Schenker (1993: 60–61, 114) for the historical perspective.
10. Thanks to V. M. Pavlenko from the Psychology Department at Xarkiv University, who translated the questionnaire into Ukrainian and carried out the list task at Xarkiv.
11. Note that the alternant *koryčnevyj* is counted together with this term.
12. The alternant *salatovyj* is counted together with the term.
13. Note also the alternant *bordo*, an indeclinable adjective.
14. Note also the alternant *bež*, an indeclinable adjective.
15. This includes the alternant *purpurovyj.*
16. This includes the alternant *zolotovyj.*
17. These are the glosses given in the major Ukrainian dictionaries, for example, Bilodid (1970) and Hrinčenko (1907–1909). The main Ukrainian-English dictionary, Andrusyšen and Kret (1995), glosses both *blakytnyj* and *holubyj* as 'sky blue'.
18. The mean is calculated in such a way as to compensate for the potential distorting effect of low-frequency terms having high means because a few informants (perhaps just one) said the term early. The calculation gives all subjects a score for all terms. If a subject does not say a given term, then it is assumed that they would have eventually given it if they carried on. So, they are given a score of their total number of terms plus one. In most cases this has little effect on the relative values of the mean position scores.
19. Thanks to Alexander Povalyeav, who coordinated the task.

20. Thanks to Arnold McMillin for the Belarusian translation of the questionnaire.
21. Note that some informants had the alternate *purpurny*.
22. Note the alternant *biruza*, an indeclinable adjective.
23. Note that *šèry* was used more frequently in our sample, appearing sixteen times next to the nine appearances of *sery*.
24. See for example the gloss in Sudnik (1996) and Atraxovič (1977).
25. See Corbett and Morgan (1988: 72–75) for the original table and detailed discussion.
26. See Hays et al. (1972), who use textual frequency as a measure of psychological salience for Russian, among other languages.
27. Davies and Corbett (1994: 78).
28. See Kersta (1994–), Mel′ničuk (1982–), and Rudnyc′kyj (1962–1972) for Ukrainian, and Martynaŭ (1978–) and Žuraŭski (1982–) for Belarusian.
29. For Ukrainian, see Kersta (1994–), Mel′ničuk (1982–), and Rudnyc′kyj (1962–1972). For Belarusian, see Žuraŭski (1982–).
30. See Hrinčenko (1907–1909), who gives *brunatnyj*; the 1929 Academy Dictionary, which gives *cinamonovyj* as cited in Shevelov (1993: 992); Kmicykewytsch and Spiłka (1912), a German-Ukrainian dictionary, which gives *buryj*.
31. Cited in Davies et al. (1995: 18). Catalan, as reported by Davies et al. (1995), represents yet another possibility for the emergence of the second BLUE. The two terms *blau mar'* 'navy blue' and *blau cel* 'sky blue' have strikingly high scores in the list task, performed on a sample of forty children and forty adults. The conclusion is that they are the highest of the nonbasic terms, suggesting that a compound BLUE category is emergent. However, these terms are not monolexemic and are included in the signification of the established basic term *blau*, failing two of Berlin and Kay's basicness criteria, so anyway their basic status is problematic.
32. For the list task eighty children and 153 adults were consulted. Fewer were consulted for the naming task (seventeen children and thirty-three adults).

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